

***Trichinella* Certification in the U.S. Pork Industry**

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Summary: We report here on a certification pilot study using an on-farm auditing system to document good production practices for swine relative to the risk of exposure to *Trichinella spiralis*. Based on the results, improvements in the program have been made and further piloting of the program is being undertaken prior to launching the Trichinae Certification Program in the United States. The *Trichinella* certification mechanism will establish a process for ensuring the quality and safety of animal-derived food products from the farm through slaughter.

Keywords: Food Safety, Trichinae, Pork, Trichinellosis, Pre-harvest Pork Safety

Introduction: Control of *Trichinella* infection in pork has traditionally been accomplished by inspection of individual carcasses at slaughter or by post-slaughter processing to inactivate parasites. Declines in prevalence of this parasite in U.S. domestic swine during the last twenty to thirty years coupled with improvements in pork production systems offer the opportunity to document pork safety at the farm level.

Materials and Methods: Based on the lack of *Trichinella* infection in U.S. swine and with an understanding of how to avoid the risk of pig exposure to the parasite we conducted this study to establish a system to document U.S. production practices that preclude swine exposure to *Trichinella* on-farm, thereby preventing infection.

An on-farm audit was developed to determine the presence of risk factors for exposure of pigs to potential sources of *Trichinella*. The audit contained questions concerning farm management, bio-security, feed and feed storage, rodent control programs, and general hygiene. The audit involved both a production management records review and a site inspection.

A training program was developed to provide veterinary practitioners with the skills and knowledge to administer the audit for good production practices.

Auditor training included basic knowledge on parasite biology and transmission, as well as information on bio-security, rodent control, and sanitary measures targeted at pork production facilities.

Results: The auditors completed 198 audits on a total of 353 production sites. Of the sites surveyed, 59% were farrow-to-finish and 41% were grow-finish. Few production sites met all criteria established within the audit for risk-free management practices. Most of the deficiencies were noted in the lack of a regular rodent control program around swine rearing buildings.

To test seasonal variation in audit findings, a second questionnaire was administered on these same production sites at periods ranging from four months to fourteen months after the first audit. A total of 151 second audits were obtained. Only minor variations in responses were obtained which could be attributed to seasonal variation. These variations included increased evidence of wild mammals in the vicinity of swine housing facilities during the spring season ($p = 0.01$) and increased efforts on the part of producers to use rodent control methods inside swine housing facilities, also during the spring season ($p = 0.03$) (Gamble et al., 2000).

From a total of 221,123 carcass samples tested from audited farms during a six-month period, no *Trichinella* positive carcasses were detected by diaphragm digestion or ELISA testing.

Discussion: Prevention of human trichinellosis resulting from the ingestion of pork is variously accomplished through meat inspection testing, through processing of pork products by heating, freezing, irradiating or curing, and through consumer education with respect to meat preparation. To date, the U.S. has relied on post-slaughter processing and consumer education regarding proper methods of meat preparation (Gamble, 1997).

The Trichinae Certification Program provides documentation of swine management practices or Good Production Practices (GPPs) which minimize risk of exposure of swine to *Trichinella spiralis*. These GPPs are limited to management practices that prevent pigs from ingesting feed contaminated with *Trichinella*, uncooked waste products containing *Trichinella*, and rodents or other animal carcasses, including other swine carcasses that contain the infective parasite stages.

Educational efforts are needed to provide pork producers with sufficient knowledge of good production practices that prevent potential exposure to *Trichinella*. The most common GPP deficiency in this study was a lack of a proper rodent control system.

Currently, in the early stages of implementation, the proposed Trichinae Certification Program includes the following elements:

1. Veterinarians, trained in good production practices relative to *Trichinella*, work with their producers to ensure that *Trichinella* infection risk factors are minimized on pork production sites.
2. The on-farm audit is used to document the absence of *Trichinella* infection risks. Audits will be conducted periodically to ensure that good production practices relative to *Trichinella* remain in place.
3. On a regular basis, a statistical sample of the national certified herd will be tested at slaughter using diaphragm digestion or ELISA to verify that on-farm controls are working.
4. USDA veterinarians will conduct random “spot audits” of certifications to ensure completeness and the integrity of the program.

With the completion of the current pilot project an on-farm certification system for *Trichinella*-free production practices will have been developed and validated. The prevalence of swine trichinellosis is extremely low in the United States. Farm management strategies for eliminating the risk of infection are simple and in most cases easily implemented. Most management systems now in use have only minimal *Trichinella* infection risks that can be easily eliminated. This lack of risk factors for swine infection with this parasite can easily be documented and monitored through a certification process. In addition, the implementation of the Trichinae Certification Program will provide an infrastructure for tackling more complex on-farm quality assurance and food safety issues.

References

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